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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,606	12/14/2005	Paul Joern	1-17024	4084

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EXAMINER	
TOLIN, MICHAEL A	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/533,606	JOERN, PAUL	
	Examiner	Art Unit	
	MICHAEL A. TOLIN	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4 and 7-9 are rejected under 35 U.S.C. 102(b,e) as being anticipated by Taggart (US 2002/0059976).

Taggart teaches a method for the production of a three-dimensional preform having a final three dimensional target shape from textile starting materials wherein a two dimensional bonded fabric is formed by laying textile starting materials two-dimensionally to form a stack which is subsequently subjected to heated rollers in order to bond the stack together into a two dimensional bonded fabric. The two dimensional bonded fabric is subsequently subjected to shaping and/or draping to form the final three dimensional target shape. The claimed shaping/draping step does not distinguish over the placement of the two dimensional fabric into a mold with subsequent shaping to conform the fabric to the mold and cover the mold. See Taggart (Abstract; Figures 3-

5; paragraphs 6, 37-55, 60, 61 and 63). As to laying the textile starting materials with a back-calculated geometry and orientation, Taggart indicates that the process is fully automated with programming directly linked to three-dimensional part design software (paragraph 40). Taggart also indicates that this automation includes the formation of two dimensional plies having the desired geometry and orientation for subsequent shaping (paragraphs 47, 48, and 50-52). In indicating that two dimensional plies having the desired geometry and orientation are automatically formed by use of a direct link to three-dimensional part design software, it is clear that the geometry and orientation have been back-calculated from the three-dimensional target shape and are laid to form the two dimensional bonded fabric according to the calculated geometry and orientation.

As to the new limitation of the shaping and/or draping wherein the textile starting material is not yet definitely fixed in position, it is clear from Taggart that two-dimensional fabric can be placed in a tool having a cavity such that closing of the tool forces the fabric into the shape of the closed cavity (paragraph 63). Since the fabric can be shaped in this manner, it is considered to be "not yet definitely fixed in position". Taggart further explains that the fabric may be subjected to mild compaction, allowing a dry forming operation for complex geometries (paragraph 55). It is clear from this teaching as well that the textile starting material is not yet definitely fixed in position. The claims do not preclude any and all fixing steps prior to shaping and/or draping. The claims only require the textile starting material is not yet definitely fixed in position. Accordingly, this limitation is satisfied by Taggart for the reasons provided above.

Regarding claim 2, Taggart clearly teaches compacting (paragraphs 54 and 55).

Regarding claim 3, Taggart suggests the use of tapes (paragraphs 38 and 50).

Regarding claims 4 and 7, the claimed fixing is satisfied by the infusion of liquid matrix resin after shaping, which ultimately binds the reinforcing fibers of the fabric together to form the finished part, into the shaped fabric (paragraph 63).

The limitations of claims 8 and 9 are clearly taught by Taggart (Figures 4 and 5; paragraph 38).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taggart as applied to claims 1-4 and 7-9 above.

While Taggart does not recite that the starting textile materials are fixed by adhesive strips or sewing, it is well known in the art to provide such textile materials fixed by adhesive strips or sewing in order to stabilize the textile materials for layup operations. Alternatively, this fixing step is satisfied by well known fixing steps using adhesive strips or sewing to secure a stack of fabric material prior to subjecting to a resin infusion process to form the desired three-dimensional part. Taggart is clearly directed to such resin infusion processes (paragraphs 6 and 63). It would have been

obvious to one of ordinary skill in the art at the time of the invention to provide fixing with adhesive strips or sewing because one of ordinary skill in the art would have been motivated to stabilize the textile materials or to secure the stack of starting material for subsequent resin infusion in accordance with methods well known in the art.

5. Claim 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taggart as applied to claims 5 and 6 above, and further in view of either one of Wang (US 5038291) or Williamson (US 4534813), and further in view of any one of Cogburn (US 3995080), Cavallaro (US 5078396) or Marshall (US 4627791).

Since Taggart does not explicitly recite back-calculation of the geometry and fiber orientation of the textile materials which are to be laid up, the claims are rejected here in the alternative to show that one of ordinary skill in the art would have been motivated to provide such back-calculation.

With regard to back calculation of textile geometry, Wang teaches such back calculation in order to form accurate ply patterns in a short period of time using automated equipment (column 2, lines 5-61). Alternatively, Williamson teaches such back calculation in order to assure that flat plies will be laid up in their proper orientation in a composite structure and that such flat ply geometry may be determined by back calculation from a three-dimensional target (Abstract; column 2, lines 45-68; column 5, lines 15-25; column 7, lines 46-47; column 9, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed back calculation of geometry in the method of Taggart because one of ordinary skill in the art

would have been motivated to achieve the above noted advantages in accordance with the teachings of either one of Wang or Williamson.

With regard to back calculation of textile orientation, Cogburn teaches that such back calculation should be provided in order to efficiently use the textile material in amounts and directions to accommodate primary and secondary loadings (column 1, lines 59-65; column 5, lines 40-68; column 6, lines 1-5; column 6, lines 63-68; column 7, lines 1-8; column 8, lines 24-28). Cavallaro teaches that such back calculation should be provided in order to determine ideal fiber orientations and percentages for achieving desired levels of bending, transverse and shear strengths (column 3, lines 6-20). Marshall teaches that such back calculation should be provided using well known engineering techniques in order to ensure desired bending strength (column 3, lines 28-36; column 5, lines 6-20). Accordingly, it is clear from any one of Cogburn, Cavallaro or Marshall that one of ordinary skill in the art would have been motivated to provide the claimed back calculation of orientation in the method of Taggart in order to achieve the necessary strength or stiffness in various directions of the three-dimensional part. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed back calculation of orientation in the method of Taggart because one of ordinary skill in the art would have been motivated to achieve the above noted advantages in accordance with any one of Cogburn, Cavallaro or Marshall.

Response to Arguments

6. Applicant's arguments filed 23 March 2010 have been fully considered but they are not persuasive.

Applicant's arguments directed to the new limitation of shaping and/or draping wherein the starting material is not definitely fixed are not persuasive for the reasons provided in the new grounds of rejection applied above.

Applicant argues neither Wang nor Williamson are directed to shaping and draping a two-dimensional fabric to build a three-dimensional part wherein the fibers of the two-dimensional fabric are still at least partially moveable with respect to each other. In response Wang and Williamson were not relied upon for shaping a two dimensional fabric which is not definitely fixed. The primary reference to Taggart was relied upon for this limitation. These references were relied upon for providing motivation to perform the claimed back calculation in the method of Taggart. These references are clearly directed to back calculation of a two dimensional starting material geometry to insure proper orientation upon shaping into a desired three-dimensional layer of a composite structure.

Applicant argues that Cogburn, Marshall and Cavallaro suggest fibers which are fixed within a ply. However, each of these references was only relied upon for suggesting back calculation of textile orientation in the method of Taggart. Moreover, the claims do not reference the fibers of within a given ply. The claims merely indicate that the starting material is not definitely fixed in position during shaping and/or draping. A starting material which can be subjection to shaping and draping in the manner

indicated by the primary reference to Taggart is considered to satisfy this limitation for the reasons provided in the new grounds of rejection applied above.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The new grounds of rejection were necessitated by the new limitations and changes to claims 1 and 7 in the most recent amendment.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. TOLIN whose telephone number is (571)272-8633. The examiner can normally be reached on M-F 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael A Tolin/
Primary Examiner, Art Unit 1791